# Morbidity in family medicine: the potential for individual nutritional counseling, an analysis from the Nijmegen Continuous Morbidity Registration[1,2]

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**ABSTRACT** Nutritional counseling is a common primary care intervention but few empirical data are available. This study analyzed morbidity in family medicine practices and the relevance of nutritional counseling. Morbidity data from the Nijmegen University family medicine Continuous Morbidity Registration were studied. Since 1967 four practices (seven family physicians) have recorded all new episodes of illness. Physicians were trained and supervised monthly in their coding and classification of morbidity with diagnostic criteria. Two experienced family physicians assessed the nutrition sensitivity of all 400 diagnostic rubrics of the classification list. Incidence and prevalence of all morbidity and of nutrition-sensitive morbidity were calculated. The most common (chronic) diseases in family practice were a mixture of diseases of organ and body systems: hypertension, obesity, cardiovascular disease, chronic arthritis, asthma, chronic obstructive pulmonary disease, eczema, and diabetes mellitus. The prevalence of these diseases gradually increased in the past decade. Forty-eight diagnostic rubrics were considered to be nutrition sensitive, accounting for 16.5% of diagnoses recorded. Their prevalence also increased in the past decade. The survey supports the importance of nutrition-related interventions in family medicine but underlines that these interventions are directed at a variety of illnesses and patient groups. Common nutritional intervention techniques that can be applied in the personal care of patients in the context of their family life should be developed. *Am J Clin Nutr* 1997;65(suppl):1928S–32S.

**KEY WORDS** Family medicine, nutritional advice, primary care, disease classification, chronic disease, morbidity, incidence, prevalence

## INTRODUCTION

Throughout time, patients have consulted their physicians for nutritional advice and physicians have prescribed solicited and unsolicited dietary interventions. In modern society undernourishment has been replaced by abundance of wealth leading to increased consumption of high-fat foods as the predominant nutritional problem. Nutritional advice has become an important part of health promotion.

Medical care in the community is concerned with the treatment and prevention of a large number of illnesses and diseases. There are different terms to indicate specialized medical professionals in the community: *family medicine practitioner*, *general practitioner*, and *primary medical care practitioner* are more or less equivalent. I will use *family physician*. The family physician responsible for medical care in the community must be able to apply a variety of interventions, including pharmacotherapy, patient education, and counseling.

The medical tasks of family medicine are comprehensive and depend in part on the structure of the health insurance system: in the United Kingdom, the Netherlands, and other countries with a primary care gatekeeper, patients in the community can be expected to present new episodes of illness to their family physician. A typical feature of family practice is being the first contact individual patients have with the medical profession concerning a new illness (1). More important for family practice, however, is the task of providing individual care for the large majority of health problems in the community in which prevention and health promotion feature prominently (1–4). The many contacts between patient and physician over time form the conceptual basis for disease prevention and health promotion in individuals. These contacts provide an opportunity for individually tailored advice and intervention, in other words, proactive care (3). The family physician's insight into patients' social circumstances and family networks (1, 4) provides additional support for promoting health. Interventions in family medicine are guided by the minimum input–maximum output principle: to achieve as much effect as possible by an individualized intervention that is as limited as possible. Prevention and early intervention should be seen in this perspective (1, 2, 5, 6).

The role and tasks of family practice are strongly based in conceptual considerations. This poses the danger of soliciting expectations that are not met in daily practice. The aim of this study was to review the morbidity pattern in the community and assess the clinical content of family practice care for patients in the context of its relation to nutritional advice and counseling.

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## METHODS

Morbidity data were analyzed from the Continuous Morbidity Registration (CMR) of the Department of Family and Social Medicine, University of Nijmegen. The CMR is a family practice–based morbidity register that has been in operation since 1967 in a stable population (7–11). It records every episode of morbidity presented to family physicians by patients. The relevance and limitations of the register are directly influenced by the Dutch health care structure. Two aspects of this structure are of particular importance in this respect: in the Dutch health care system, the family physician has a defined list of patients (the practice population) and he or she is the gatekeeper of access to professional medical care. As a consequence, the system collects all cases of disease in a defined population for which professional medical care is sought. In addition to the cases presented in family practice, all cases discovered in specialist care—after referral—are included as well.

The CMR includes four family practices in the Nijmegen region with seven family physicians and is responsible for ≈12 000 patients. The practices and the physicians involved have a prominent academic primary care status. On the other hand, no selection was involved in the inclusion of the patients in the practices. The patient population reflects the "average" patient in family practice in the eastern part of the Netherlands. The sex and age distributions of the patient population parallel those of the Dutch population at large.

Each episode of morbidity presented to the family physician is recorded in diagnostic terms. The family physician who diagnoses and treats the episode provides the diagnostic coding as well. An episode of morbidity is defined according to the international glossary for family practice (12). Follow-ups of already-recorded morbidity are not recorded. The data are stored by date of presentation and diagnosis, in relation to the demographic data of the patient: sex, age, social class, and family composition, enabling an analysis of morbidity according to these characteristics.

The registration has been in use since 1967 in two practices, with an extension to the current four practices in 1971. Longitudinal studies of morbidity in family medicine have become the main objective of the register (7). Special measures are used to secure the validity of the data (7). These include the following:

1) The use of diagnostic criteria [the definitions of diagnosis for primary care (13) were included in the original classification list (14, 15)].
2) Training and support of participating family physicians: this involves classification of the patient's problem at the highest diagnostic level of interpretation and use of the diagnostic definitions (through use of vignette cases).
3) Classifying and coding procedures: the family physician can postpone classifying or coding until more certainty has been achieved (for example, from the natural history of the disease, diagnostic tests, or a specialist's assessment).
4) Discussion of coding problems in monthly meetings of all participating family physicians and supervision of the consistency of classification and coding (through use of random vignette cases).
5) Monitoring of the completeness of the data by comparing the patients' files in the practice with coded diagnoses.

A comparison of diagnosed cases with external diagnostic criteria showed satisfactory validity of the recorded diagnoses (7).

### Relevance for nutritional counseling

Two family physicians reviewed independently all diagnostic rubrics used in the CMR (14) and assessed the relevance of nutritional advice or counseling or both in the management of each disease. In cases for which no consensus existed, a verdict was reached after a discussion. "Relevance of nutritional advice or counseling or both" was defined as the inclusion of some dietary advice in the usual and accepted family medicine treatment of a disease. These diagnoses were considered to be diagnoses of nutrition-sensitive diseases. This definition precluded patients' beliefs, folk medicine, or complementary medicine beliefs.

### Analysis

Recorded diagnoses were retrieved from the CMR database. Two sets of diagnoses were taken into account: *1*) the most frequent diagnosis made in family practice [this was based on the 10 most frequently diagnosed acute diseases (top 10 acute diseases) and the 10 most frequently diagnosed chronic diseases (top 10 chronic disease)] and *2*) all diagnoses that had been assessed as diagnoses of nutrition-sensitive diseases. Two time periods were considered: 1989–1993 for calculating incidence and prevalence and 1971–1993 for calculating trends in time. Incidence was defined as the number of new diagnoses per year (numerator) per 1000 patients in the practice (denominator) (12). Incidence was averaged over the years 1989–1993. Prevalence was defined as the total number of cases (both new and already diagnosed) per year (numerator) per 1000 patients in the practice (denominator) (12). Trends over time were calculated as the average annual incidence and prevalence of five successive time periods: 1971–1975, 1976–1980, 1981–1985, 1986–1990, and 1991–1993. Distributions by sex and age were computed only to illustrate the variance in these respects. Age distributions were based on standard age groups (12).

## RESULTS

The diseases most commonly diagnosed in family medicine are presented in **Table 1**: this list takes into account the top 10 chronic diseases. The list includes a mix of diseases in terms of body systems involved and severity. Trends since 1971 in the incidence and prevalence of the top 10 chronic diseases are given in **Figure 1**. Incidence remained stable whereas prevalence gradually increased.

Nutritional advice was considered to be a core aspect of the management of 48 of the > 400 diagnostic rubrics. The most common of these diagnoses are listed in **Table 2**. Nineteen conditions were not included in Table 2 because their prevalence was < 1.0. A comparison with Table 1 makes it clear that Table 2 includes some of the most frequently treated diseases in family practice. The average annual number of episodes of these nutrition-sensitive diseases was 83 307/y, which was

**TABLE 1**
Ten most commonly diagnosed chronic diseases in general practice in 1989–1993[1]

| | Incidence | Prevalence |
|---|---|---|
| Hypertension | 3 | 54 |
| Obesity | 2 | 42 |
| Chronic ischemic heart disease | 5 | 37 |
| Arthritis of hip or knee | 5 | 33 |
| Chronic respiratory disease (asthma, COPD) | 5 | 32 |
| Eczema | 5 | 23 |
| Diabetes mellitus | 2 | 21 |
| Hay fever | 5 | 18 |
| Hyperlipidemia | 4 | 17 |
| Psoriasis | 2 | 13 |

[1] Incidence is the number of new diagnoses per year per 1000 patients in the practice and prevalence is the total number of cases (both new and already diagnosed) per year per 1000 patients in the practice. COPD, chronic obstructive pulmonary disease.

16.5% of the average 503 713 new episodes of disease recorded each year.

The nutrition-sensitive diseases also were a mix in terms of body systems involved and (potential) severity. Digestive tract infections and diseases are featured prominently in the list, as could be expected: gastroenteritis, hepatitis, constipation, gastric (ulcer) disease, diverticulitis, and gallstones. But other body systems were also frequently involved, notably the skin and cardiovascular system, as were psychosocial circumstances. There were different reasons for considering a disease to be nutritionally sensitive. In some cases the nutritional challenge was to redress abundance of food intake or to promote consumption of healthy foods (for example, in obesity, hypercholesterolemia, and diabetes mellitus). The treatment of partial dietary deficiencies (for example, pernicious and hypochromic anemia), however, could be traced as well. Other nutritional involvement was directed at the protection of failing organs from the effects of normal foods (for example, in uremia and heart failure) or was a way to improve the patients' coping with degenerative morbidity (for example, with arthritis of the hip and knee).

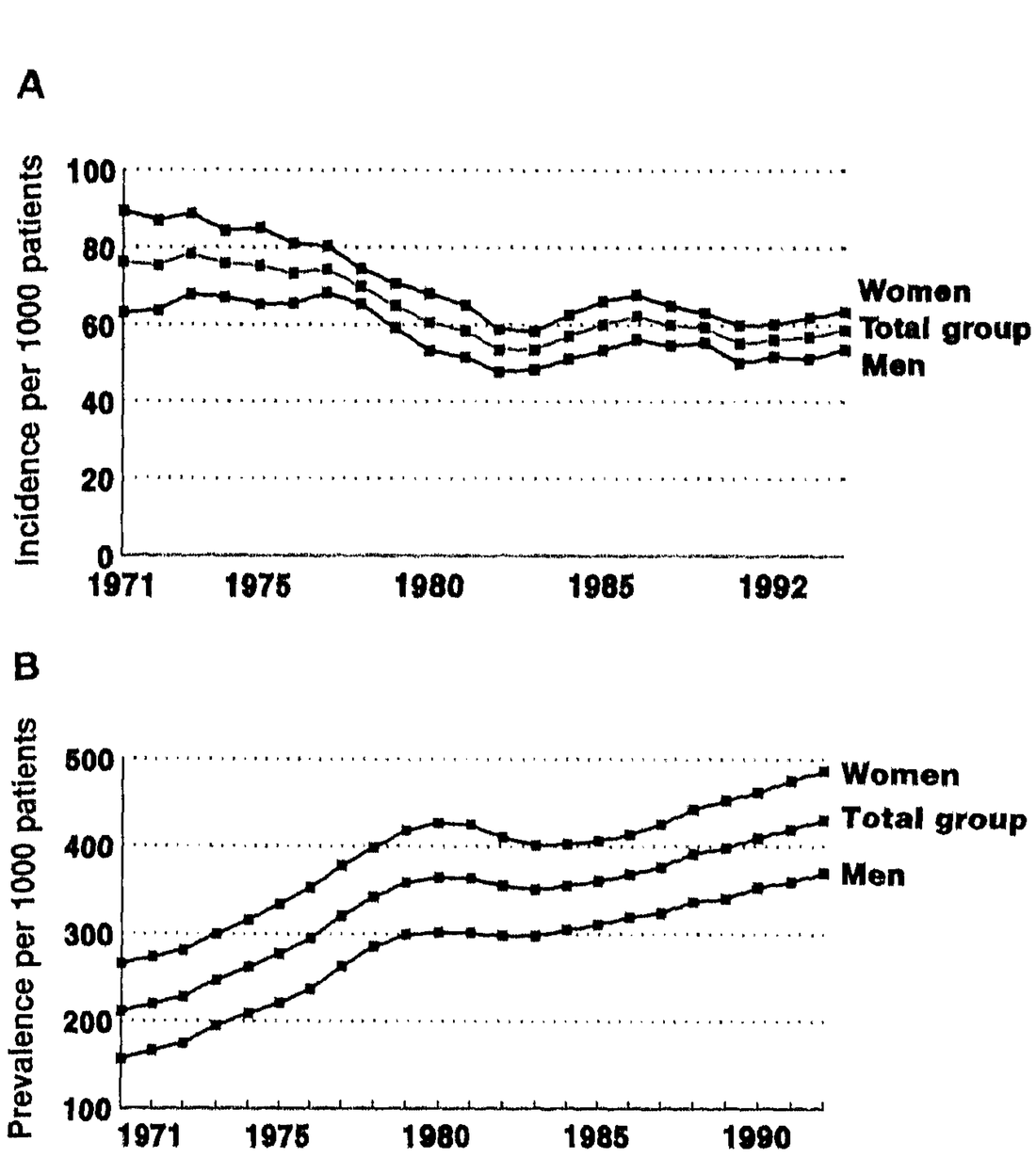


**FIGURE 1.** Trends since 1971 in the incidence (A) and prevalence (B) of the 10 most frequently diagnosed chronic diseases (3-y progressive averages). Incidence is the number of new diagnoses per year per 1000 patients in the practice and prevalence is the total number of cases (both new and already diagnosed) per year per 1000 patients in the practice.

**TABLE 2**
Prevalence of nutrition-sensitive diseases in family practice in 1989–1993[1]

| Diagnosis | Prevalence |
|---|---|
| Hepatitis | 1.2 |
| Urticaria | 5.3 |
| Allergic dermatitis | 4.7 |
| NIDDM | 16.9 |
| Gout | 4.8 |
| Obesity (BMI > 30) | 42.8 |
| Obesity (BMI 25–30) | 78.3 |
| Hypercholesterolemia | 19.4 |
| Pernicious anemia | 1.4 |
| Hypochromic anemia | 6.0 |
| Irritable bowel syndrome | 5.2 |
| Alcohol abuse | 5.6 |
| Myocardial infarction | 16.3 |
| Angina pectoris | 21.6 |
| Heart failure | 12.6 |
| Hypertension | 56.0 |
| Disease of esophagus | 1.8 |
| Gastric ulcer | 1.0 |
| Duodenal ulcer | 4.1 |
| Other diseases, upper abdomen | 18.4 |
| Diverticulitis of large intestine | 4.1 |
| Gallstones | 2.9 |
| Gastroenteritis | 30.9 |
| Constipation | 10.1 |
| Urinary calculus | 3.9 |
| Dermatitis | 64.3 |
| Osteoarthritis of hip | 13.9 |
| Osteoarthritis of knee | 22.9 |
| Uremia | 1.2 |

[1] Prevalence is the total number of cases (both new and already diagnosed) per year per 1000 patients in the practice. NIDDM, non-insulin-dependent diabetes mellitus.

Different patterns of sex and age distribution were found; some diseases were predominantly the domain of the young (for example, gastroenteritis) and others of the old (for example, gallstones). Pernicious and hypochromic anemia were seen particularly in women and cardiovascular diseases were seen mainly in men. The most eye-caching example from Table 2 is summarized in **Figure 2**.

Trends in incidence and prevalence of the nutrition-sensitive diseases since 1971 are shown in **Figure 3**. Incidence decreased over time, whereas prevalence modestly increased.

## DISCUSSION

This survey analyzed the most frequently encountered diseases in family practice and identified several diseases for which the family physician relies largely on nutritional advice

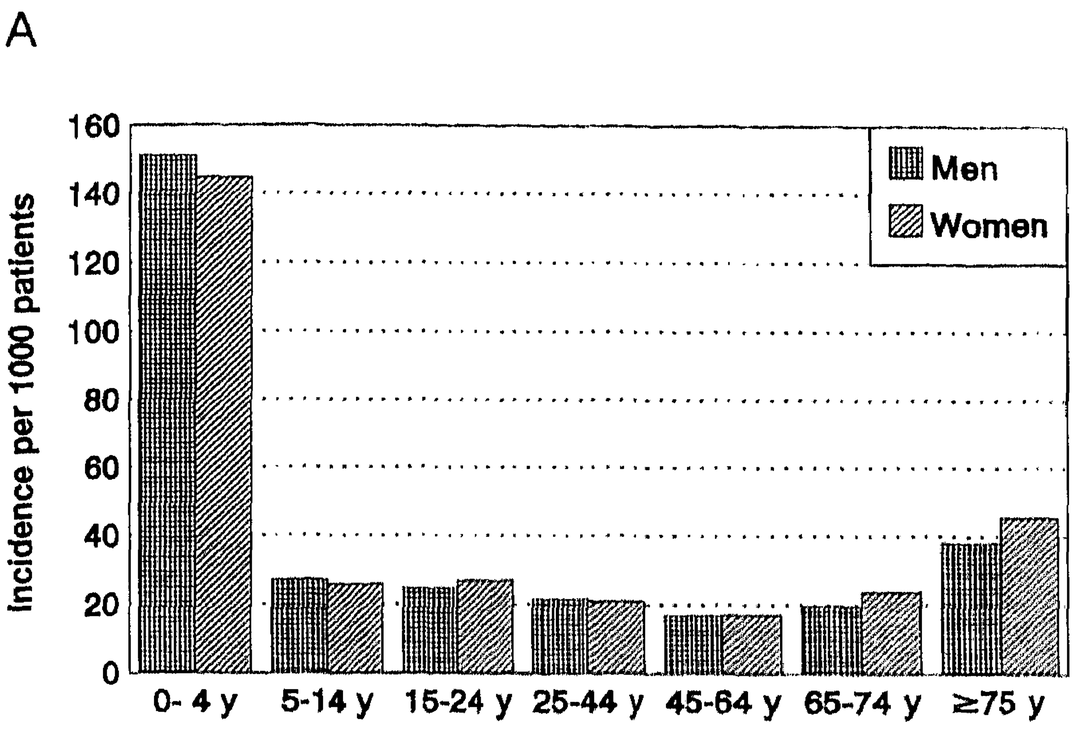


**FIGURE 2.** Incidence (A) and prevalence (B) of gastroenteritis (1989–1993) among men and women of different age groups. Incidence is the number of new diagnoses per year per 1000 patients in the practice and prevalence is the total number of cases (both new and already diagnosed) per year per 1000 patients in the practice.

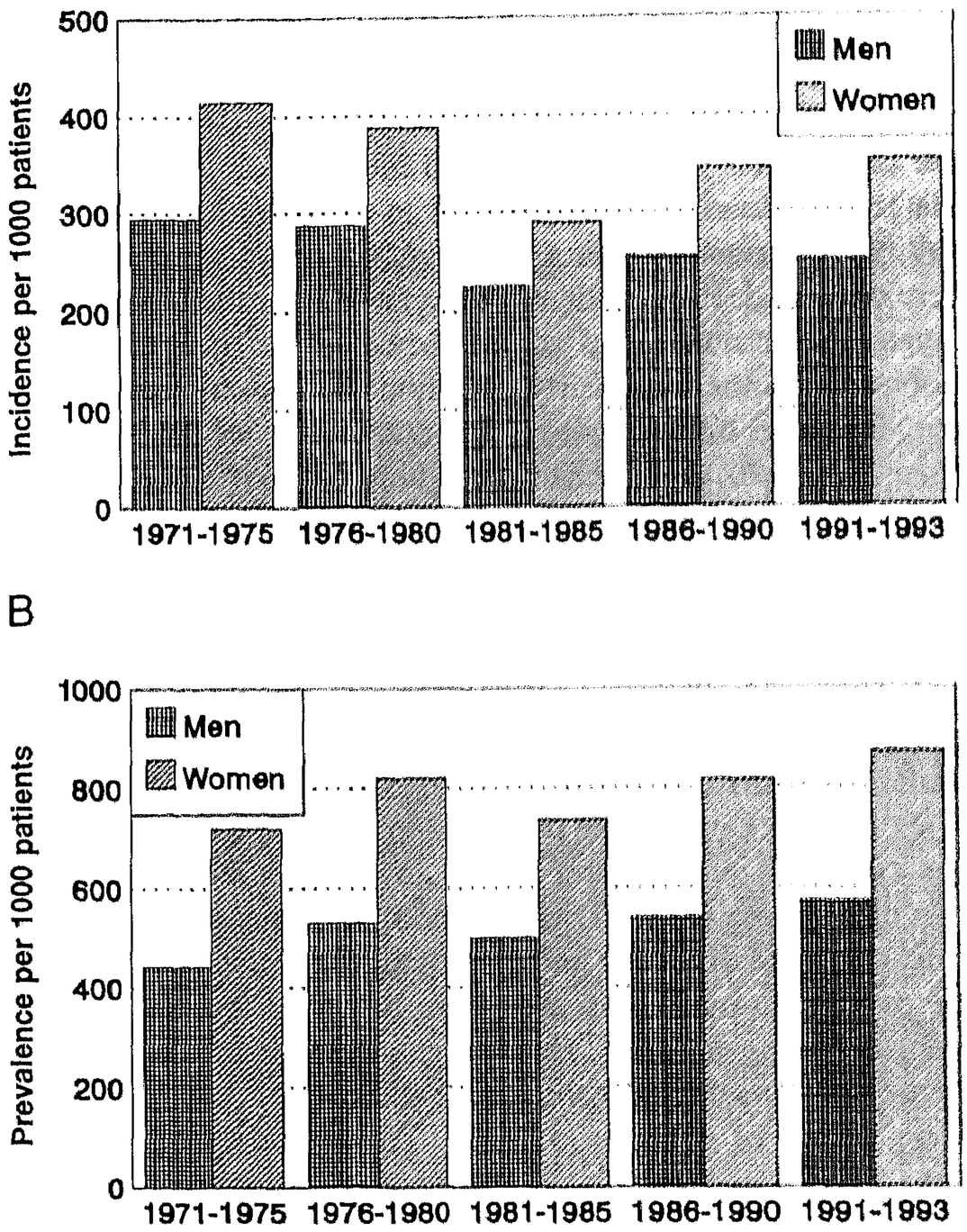


**FIGURE 3.** Trends in incidence (A) and prevalence (B) of nutrition-sensitive diseases (1971–1993). Incidence is the number of new diagnoses per year per 1000 patients in the practice and prevalence is the total number of cases (both new and already diagnosed) per year per 1000 patients in the practice.

for disease management (nutrition-sensitive diseases). A substantial number of the acute diseases treated in family practice are self-limited respiratory tract infections and skin diseases. The predominant chronic diseases involve the cardiovascular system (hypertension and chronic ischemic heart disease), the lungs (asthma and chronic obstructive pulmonary disease), the locomotor system (arthritis of the hip and knee), and the skin (eczema and psoriasis) and also include diabetes mellitus, obesity, and hyperlipidemia. The effect of a nutrition-related workload was estimated from the recorded diagnoses. Two experienced family physicians compiled a list of nutrition-sensitive diagnoses from the classification list. More than 10% of the diagnostic categories on the classification list were assessed as nutrition-sensitive diseases. Although some of these diseases had a low prevalence in the morbidity pattern of family medicine, a substantial number belonged to the core of diseases treated by family physicians.

The general aspects of the morbidity pattern shown in this survey agree with other primary care data (16–18). Because the CMR is one of few databases reporting primary care morbidity over a long period of time, it is difficult to compare with other sources the trends found in this study. From our findings, an increased demand can be expected for nutrition-related advice in family practice. This is mainly due to the provision of more care for chronic diseases. An interesting feature of the increased workload of treating chronic disease is its background: it is not so much new cases that cause the increase as it is the stability of incidence over the observation period. The increase is by and large seen as an increase of already diagnosed cases under care (the prevalent cases). The increase also implies a longer period of follow-up care once a diagnosis is made.

The increased demand for nutrition-related advice will be influenced by the improved life expectancy of elderly patients with chronic disease (19, 20) but it will also be caused in part by the routines of managing chronic diseases (21). Regular follow-up is promoted to monitor patients' conditions and review treatments (3, 22–24). This emphasizes the importance of continuity of care (25, 26) and it can be concluded from this survey that a substantial part of the continuity of care is concerned with nutritional counseling. In this respect, it should be kept in mind that comorbidity is a feature of chronic diseases (27, 28): up to 50% of patients in family practice with chronic disease have two or more common chronic diseases. The implication of this is that (nutritional) advice and care cannot be so much disease guided as they are tailored to the individual circumstances of the patient. This underlines the need for individual long-term care—the basic skill of the family physician—and consequently the need to include nutritional expertise as a basic requirement for family medicine.

This survey did identify a substantial need for nutritional advice and counseling. Yet, it is important to stress that the methods of the survey will have resulted in an underreporting of the true volume of this need. The survey was based on recorded diseases in family medicine, in a database that took into account only diagnosis-related information. The nutrition-related workload was estimated from the disease pattern. This way, two important sources of demand for nutritional advice were excluded. First, patients could have consulted their family physician for nutritional advice, irrespective of actual health problems—something fairly common in (Dutch) family practice. Because these requests for nutritional advice were not disease-related, the disease recording did not take these requests into account. Neither did the recording account for nutritional advice during so-called opportunistic health promotion (contacts with patients that the family physician might use to initiate lifestyle-related preventive counseling) (3, 22).

Despite this inherent methodologic shortcoming, the survey presents evidence of a core role for nutritional advice in family medicine. Nutrition-sensitive diseases were responsible for one in six episodes of disease managed in family medicine. Behind this common denominator hides, however, a substantial mixture of diseases (1, 2). Different body systems were involved, most often the digestive and cardiovascular tracts, the skin, and the psychic domain. Diseases were recorded in both men and women, young and old. This reflects the true nature of family medicine—unselected care for all diseases in every stage for every group of patients (1, 2, 5). The character of the nutritional advice as well mirrors the generic background of family medicine. Advice can be directed at the promotion of healthy foods or at the inclusion in the diet of critical ingredients. Some advice has a short-term objective, but from the data presented here, it becomes clear that a large amount of nutrition-related advice in family medicine has a long-term objective: the prevention or care of chronic disabling morbidity.

This finding should be placed against the background of the further development of family practice. It points to the specific expertise needed by family physicians in addition to all-around medical competence. Given the limited attention paid to nutrition and diet-related aspects of medicine in most medical training, this is a relevant conclusion in itself. At the same time, there is the need for a standard method of providing nutritional advice, irrespective of the disease involved (29). In particular, the long-term effects of such advice should be addressed. It seems attractive to base this method on the inherent strength of family practice: the doctor-patient relationship. As can be concluded from this survey, a substantial part of nutritional advice in family practice is directed at patients with chronic diseases—patients who are probably suffering from more than one disease and who are under long-term, on-going care.

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